

**Frederick National Laboratory  
for Cancer Research**

*sponsored by the National Cancer Institute*

Vaccine, Immunity and Cancer Directorate  
Standard Operating Procedure

**SOP Title:** Use and Maintenance of a 2-8°C Refrigerator

**Document ID:** 26005

Version

3.0

**Page 1 of 9**

Supersedes

2.0

**Effective Date:** 17Sep21

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**SOP Title:** Use and Maintenance of a 2-8°C Refrigerator

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Version

3.0

**Page 2 of 9**

Supersedes

2.0

**Effective Date:** 17Sep21

## 1. PURPOSE

- 1.1. The purpose of this procedure is to describe the proper use and handling of a 2-8°C Refrigerator.

## 2. SCOPE

- 2.1. This procedure applies to all laboratory refrigerator units.

## 3. REFERENCES

- 3.1. Laboratory Refrigerator User Manual
- 3.2. 26005-01: 2-8°C Refrigerator Maintenance Form
- 3.3. 26005-02: 2-8°C Refrigerator Temperature Monitor Log Form
- 3.4. 10007-01: Non-Routine Equipment Maintenance Form
- 3.5. 15000: Waste Disposal at the Advanced Technology Research Facility

## 4. RESPONSIBILITIES

- 4.1. The Research Associate, hereafter referred to as Analyst, is responsible for reviewing and following this procedure, and documenting performance of equipment maintenance.
- 4.2. The Scientific Manager or designee is responsible for training personnel in this procedure and reviewing associated documentation.
- 4.3. The Quality Assurance Specialist is responsible for quality oversight and approval of this procedure.
- 4.4. Trained personnel perform equipment maintenance record review per "10009: General Record Review."

## 5. REAGENTS, CHEMICALS AND EQUIPMENT

- 5.1. Primary Disinfectant (Cavicide, FNLCR Warehouse, Cat # 79300360 or equivalent)
- 5.2. Revco 2-8°C Refrigerator or equivalent.
- 5.3. Secondary Disinfectant (Ster-ahol, VWR, Cat # 14003-358 or equivalent)
- 5.4. Wipe, Low-Lint, Wypalls (FNLCR Warehouse, Cat # 79300335 or equivalent)

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**SOP Title:** Use and Maintenance of a 2-8°C Refrigerator

**Document ID:** 26005

Version

3.0

**Page 3 of 9**

Supersedes

2.0

**Effective Date:** 17Sep21

## 6. HEALTH AND SAFETY CONSIDERATIONS

- 6.1. Proper safety precautions should be taken while working in a laboratory setting. This includes, but is not limited to, proper protective equipment such as lab coats, safety glasses, closed-toe shoes, and non-latex gloves.
- 6.2. Refer to the respective SDS when working with any chemicals.
- 6.3. Refer to “15000: Waste Disposal at the Advanced Technology Research Facility” regarding waste disposal processes at the ATRF.

## 7. DEFINITIONS

- 7.1. °C – Degree Centigrade
- 7.2. As Needed Maintenance – maintenance that is performed outside of routine maintenance but is not performed in response to equipment malfunction.
- 7.3. Non-Routine Maintenance – maintenance that is performed in response to equipment malfunction or failure.
- 7.4. REES – Rees Scientific is a provider of automated temperature monitoring systems.

## 8. OPERATION

- 8.1. Start-up
  - 8.1.1. Connect power cord to outlet.
  - 8.1.2. Insert key into switch and turn power on.  
  
**Note:** Rotate power switch to ALARM ON position once temperature drops below the warm alarm set-point. See 8.1.4.
  - 8.1.3. Allow unit to reach operating temperature before loading it with any product. To stabilize the temperature profile, a 24-hour waiting period is recommended.
  - 8.1.4. After unit has pulled down to desired operating temperature, turn three-position key switch one turn further clockwise to Alarm On position.
  - 8.1.5. If a remote alarm required, hook it up at this point.
  - 8.1.6. Alarm set-points are factory pre-set for 5.5°C (warm) and 1.5°C (cold).

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**SOP Title:** Use and Maintenance of a 2-8°C Refrigerator

**Document ID:** 26005

Version

3.0

**Page 4 of 9**

Supersedes

2.0

**Effective Date:** 17Sep21

**Note:** If refrigerator is set-up with REES alarm system, it is maintained by FME.  
See Section 8.5.

8.2. Use

8.2.1. Do not leave doors open for extended periods of time.

8.2.2. If a spill occurs, wipe down and clean with appropriate cleaner. See 8.3.1.

8.2.3. If a refrigerator is not on the REES Monitoring system, Daily Temperature is recorded on business days on "26005-02: 2-8°C Refrigerator Temperature Monitor Log Form."

8.2.3.1. Reset digital thermometer prior to periods when a daily temperature log is not achievable (holidays, weekends) and record temperature min and max for the missed days. Add an asterisk (\*) to the "Actual Temp" cell during holidays and weekends when the actual temperature is not recorded on the same day.

8.3. As Needed Maintenance

8.3.1. If a spill occurs, wipe down and clean with Cavicide.

8.3.2. Record event on "26005-01: 2-8°C Refrigerator Maintenance Form."

8.4. Annual Maintenance

8.4.1. Turn off unit.

8.4.2. Remove all contents within the refrigerator.

8.4.3. Spray internal unit with Cavicide and wipe with a clean low-lint wipe.

8.4.4. Turn unit on and allow it to stabilize between 2-8°C, then return contents to the refrigerator.

8.4.5. Document maintenance performed on HSL\_EQ\_007.01: 2-8°C Refrigerator Use and Maintenance Form.

8.5. Annual Calibration

8.5.1. Facilities, Maintenance, and Engineering (FME) or a contracted vendor shall perform annual calibration of the 2-8°C Refrigerator, if required.

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**Document ID:** 26005

Version

3.0

**Page 5 of 9**

Supersedes

2.0

**Effective Date:** 17Sep21

8.5.2. Document maintenance performed on 26005-01.

8.6. Non-Routine Maintenance

8.6.1. In the case that the refrigerator is not operating correctly, transition processes being performed to another unit (when applicable), post a sign stating the equipment is out of service and initiate non-routine maintenance documentation per "10007: Non-Routine Equipment Maintenance."

8.6.2. Document the nature of any failures or malfunctions, how and when it was discovered, and the personnel involved on "10007-01: Non-Routine Equipment Maintenance Form."

8.6.3. Initiate a service request and complete the non-routine maintenance process following 10007.

**9. SETTINGS**

9.1. Temperature Range: 2°C to 8°C

9.2. Out of Range Events

9.2.1. If the instrument maintains a temperature out of range for more than 0.5 hours, then transfer biological contents to another unit. Initiate non-routine maintenance per section 8.6.

9.3. REES monitoring

9.3.1. If REES temperature monitoring system used, the system will monitor refrigerator temperature range of 2°C to 8°C.

9.3.2. Temperature range will be monitored at: 2°C to 8°C.

9.3.3. Out of Range Events

9.3.3.1. If REES system or refrigerator unit goes into alarm, acknowledge alarm by emailing the laboratory personnel and log-in to the REES system to inhibit refrigerator for no more than 0.5 hours.

9.3.3.1.1 If refrigerator maintains temperature out of range for more than 0.5 hours, then transfer contents to another refrigerator.

9.3.3.1.1 Initiate non-routine maintenance per 8.6.

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**SOP Title:** Use and Maintenance of a 2-8°C Refrigerator

**Document ID:** 26005

Version

3.0

**Page 6 of 9**

Supersedes

2.0

**Effective Date:** 17Sep21

## 10. ATTACHMENTS

- 10.1. Attachment 1: 26005-01: 2-8°C Refrigerator Maintenance Form.
- 10.2. Attachment 2: 26005-02: 2-8°C Refrigerator Temperature Monitor Log Form.

## 11. REVISION HISTORY

Version #	Changes	Reasons
1.0	Create new SOP for use and maintenance of 2-8°C refrigerator	Currently no SOP
2.0	Remove Date column from form .02.	Redundant.
3.0	1) Added Non-Routine and As Needed Maintenance 2) Added Settings Section 3) Updated Reference Section 4) Updated Forms	1) Reflect current guidelines 2) Clarity 3) Reflect current naming schema 4) Reflect current guidelines

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**Document ID:** 26005

Version

3.0

**Page 7 of 9**

Supersedes

2.0

**Effective Date:** 17Sep21

**Attachment 1: 26005-01: 2-8°C Refrigerator Maintenance Form**

<b>Frederick National Laboratory for Cancer Research</b> <small>sponsored by the National Cancer Institute</small>		<b>Vaccine, Immunity and Cancer Directorate Standard Operating Procedure Form</b>	
<b>Form Title:</b> Refrigerator Maintenance Form			
<b>Document ID:</b> 26005-01		<b>Version:</b>	3.0
Associated SOP: 26005		<b>Effective Date:</b>	17Sep21
<b>Supersedes Version:</b>	2.0	<b>Page 1 of 1</b>	

<b>Equipment ID:</b>		<b>Maintenance Year:</b>	
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**Annual Maintenance:**

<b>Cavicide Lot Number:</b>	
<b>Cavicide Expiration Date:</b>	
<b>Performed by/date:</b>	
<b>Reviewed by/date:</b>	

**As Needed Maintenance:** ☐ N/A

Date	Activity Performed	Performed by/date	Reviewed by/date
<input type="checkbox"/> N/A			
<input type="checkbox"/> N/A			

**QA Reviewed by/date:** \_\_\_\_\_

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**SOP Title:** Use and Maintenance of a 2-8°C Refrigerator

**Document ID:** 26005

**Version**

3.0

**Page 8 of 9**

**Supersedes**

2.0

**Effective Date:** 17Sep21

### Attachment 2: 26005-02: 2-8°C Refrigerator Temperature Monitor Log Form

<b>Frederick National Laboratory for Cancer Research</b> <small>sponsored by the National Cancer Institute</small>		Vaccine, Immunity and Cancer Directorate Standard Operating Procedure Form	
<b>Form Title:</b> Refrigerator Temperature Monitor Log Form			
<b>Document ID:</b> 26005-02		<b>Version:</b>	3.0
<b>Associated SOP:</b> 26005		<b>Effective Date:</b>	17Sep21
<b>Supersedes:</b>	2.0	<b>Page 1 of 2</b>	

Month / Year		Equipment ID:		Temperature Range: 2°C to 8°C	
Thermometer Serial #:		Analyst Initials		Comments	
Day	Actual Temp (°C)	Min Temp (°C)	Max Temp (°C)	Analyst Initials	Comments
<input type="checkbox"/> N/A 1					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 2					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 3					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 4					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 5					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 6					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 7					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 8					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 9					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 10					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 11					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 12					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 13					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 14					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 15					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 16					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 17					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
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<input type="checkbox"/> N/A 19					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 20					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 21					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
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<input type="checkbox"/> N/A 28					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 29					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 30					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset
<input type="checkbox"/> N/A 31					<input type="checkbox"/> N/A <input type="checkbox"/> Thermometer reset

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**Page 9 of 9**

Supersedes

2.0

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Vaccine, Immunity and Cancer Directorate  
Standard Operating Procedure  
Form

**Form Title:** Refrigerator Temperature Monitor Log Form

**Document ID:** 26005-02

Version:

3.0

Associated SOP: 26005

Effective Date:

17Sep21

Supersedes:

2.0

**Page 2 of 2**

Note: Add asterisk "\*" to Actual Temperature cell if recording Min and Max temperature over the weekend or holiday. The asterisk indicates the actual temperature was not recorded during the indicated days, but the min and max temperature values were recorded by the thermometer during the days that the actual temperature was not recorded. Typically, this occurs during weekends and holidays.

Reviewed by/date: \_\_\_\_\_

QA Reviewed by/date: \_\_\_\_\_

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